

Title (en)

Apparatus for performing a hydroforming operation

Title (de)

Vorrichtung zum Durchführen eines Hochdruckumformvorganges

Title (fr)

Dispositif pour la mise en oeuvre d'une opération d'hydroformage

Publication

EP 1270107 A1 20030102 (EN)

Application

EP 02254536 A 20020627

Priority

US 30192901 P 20010629

Abstract (en)

A hydroforming apparatus (10) includes upper and lower platens (20,30) that are connected together by tie rods (43) extending through respective compression tubes (40). An upper die section (64) is carried on the upper platen by a generally C-shaped suspension arm (67), while a lower die section (65) is carried on the lower platen (30). The upper and lower die sections (64,65) have recessed areas (64a,64b) formed therein that define a die cavity. Lift assemblies (70) are provided on the lateral ends of the hydroforming apparatus (10) for selectively elevating the lower die section (30) upwardly into engagement with the upper die section (20). When the lower die section (30) is elevated by the lift assemblies (70), a workpiece (80) is enclosed within the die cavity. A bolster (60) is then moved between the hydroforming die (65) and the lower platen (30). A cylinder array containing a plurality of pistons is next hydraulically actuated so as to securely clamp the hydroforming die between the cylinder array and the lower platen. While the cylinder array is actuated, pressurized fluid is supplied within the workpiece, deforming it into conformance with the die cavity.

<IMAGE>

IPC 1-7

B21D 26/02

IPC 8 full level

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CPC (source: EP US)

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Citation (search report)

- [A] US 4601422 A 19860722 - DUMARGUE GUY [FR], et al
- [A] EP 1080803 A2 20010307 - DANA CORP [US]
- [A] US 5927120 A 19990727 - MARANDO RICHARD A [US]
- [X] PATENT ABSTRACTS OF JAPAN vol. 2000, no. 16 8 May 2001 (2001-05-08)

Cited by

DE102012016344A1; DE102012016344B4; EP1462191A1

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DOCDB simple family (publication)

EP 1270107 A1 20030102; **EP 1270107 B1 20070425**; AR 034665 A1 20040303; AT E360485 T1 20070515; BR 0202433 A 20030429; DE 60219717 D1 20070606; DE 60219717 T2 20080124; ES 2286207 T3 20071201; MX PA02006497 A 20040811; US 2003126902 A1 20030710; US 7047780 B2 20060523

DOCDB simple family (application)

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